Project Plan Submissions Crosswalk

Contents

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Evaluate Information about the Project Plan Submissions of the Proposed GS Site

40 CFR 146.82(a)(15) and 40 CFR 146.90; Implementation Manual Section 4; Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Plugging, Post-Injection Site Care, and Site Closure Guidance; Testing and Monitoring Guidance; and the 2012 Class VI Well Project Development Guidance.

This Crosswalk includes information from the Title 40 Code of Federal Regulations (CFR) and generally follows the layout of the Geologic Sequestration Data Tool (GSDT) and narrative templates, with additional information pulled from the Sequestration Guidance documents available on EPA's national UIC program website.

If you have uploaded a file to the GSDT the name will be captured in the system, as will all the filled-in or selected options. They can be downloaded by the permit reviewers as pdfs.

Narratives

Narratives cover the range of information desired and leave the final organization to the applicant's preference. The Crosswalk does not replace the Template but may add items to consider. Where there are similar questions repeated in different sections of the Template, the Crosswalk attempts to put those in a preliminary discussion at the front of the document in a generic format (i.e. each subsection will have a slightly different focus to reduce repetition).

Documents

To keep document size manageable and provide all the information in a usable format, it would be useful to create a separate file or files for the different types of information. If the GSDT upload option does not allow multiple files or overwrites the first one, zip the files together prior to uploading.

The Project Information Crosswalk discusses file format, styles, sizes, and types of supporting documentation requests under *Formatting and Other Data Expectations*.

Referencing Other Submissions

Note that a number of discussions are included under multiple headings and different modules. To avoid errors and duplication, please do NOT submit the detailed information twice. Include the appropriate synthesis in the section discusses and reference materials submitted as part of the permit application, via the AoR delineation modeling input advisor, etc., but references should be specific (e.g., "Computational modeling results - see permit application Section 1, pages 2 through 5 and Figures 1.7 through 1.12, as submitted 1/1/14."). Referenced materials should explicitly address the selected requirements. If using an uploaded file, include the file name as well.

Repetitive Information Requests

The plans have a number of elements that essentially repeat the same information requests. They will be summarized here. Provide data tables along the lines of template suggestions. (the repetition should be deleted from the tables after verification.)

Basic Monitoring and Testing Requirements

1. Logic for each test/parameter or technique
    a. What regulatory, site-specific or regional concern will be answered?
    b. Why was the method chosen?
    c. What are the limitations?
    d. Use in combination with …
2. Quality Assurance and Surveillance Plan (QASP) covering each planned method, parameter, and analysis. (link to R6 guidance?)
3. Location (tables):
    a. well locations: injector and monitor well network
        i. city, co. state;
        ii. lat/long
        iii. map of locations
        iv. shapefile or layer package of all well locations
    b. depth interval with reference and units;
    c. Formation name and/or zone
4. Sampling / testing / monitoring
    a. Plan
        i. Spatial distribution of results or network
        ii. Fixed, adaptive or phased schedule
            1. Sampling frequency
        iii. Alternative plans or actions; inc. all details
            1. Definition of significant
            2. Tracers
            3. Trigger
    b. Specific collection schedule
        i. Even for 'continuous'
    c. Detailed procedures or methods
        i. Specific steps
        ii. inc. equipment, gauges, materials
            1. range and precision, etc.
        iii. use of tracers
        iv. refer to QASP, safety precautions
    d. Reporting procedures & frequency
5. Analysis
    a. Laboratory to be used, Chain of Custody (COC), detection limits; (QASP)
        i. Type of output for the test/method/analysis with known limitations
    b. Method of test analysis
        i. formulas or conversion factors
        ii. techniques
        iii. citations or references

c. Define pass/fail of any test
d. How are deviations from baseline defined? Be specific
e. Where will the analysis be discussed – here or in what section of the application?

6. Supporting documentation
    a. Include citations or references
        i. If source is used frequently, supply a copy.

Tables

May not contain all values, depending on usage.

1. Monitoring or Sampling or Testing
    a. By Formation
    b. Activity/ method / parameter
    c. Device(s)
    d. locations
    e. Minimum Sampling Frequency or Frequency
        i. Continuous: device setting
    f. Minimum Recording Frequency
        i. Continuous: device setting
    g. Spatial Coverage
2. Analytical or Field Parameter
    a. By Formation
    b. Parameter
    c. Analytical Method
3. Sampling or Recording for Continuous Monitoring
    a. Parameter
    b. Device
    c. Location
    d. Minimum Sampling Frequency (device setting)
    e. Minimum Recording Frequency (device setting)
4. Equipment list (Ex. Corrosion Coupons)
    a. Well component
    b. Material of Construction

Supporting Documentation

1. Maps and Cross-sections
    a. See the discussion under the Project Information Crosswalk
2. Testing and Monitoring Results
    a. Relevant to discussions, could include well integrity (internal & external)

Generic Emergency Response Steps

1. Potential event occurs with evidence that the injected CO2 stream and/or associated pressure front may cause an endangerment to a USDW.
2. Notify the permitting agency (UIC Program Director) of the emergency event within 24 hours.
3. Determine the severity of the event, based on the information available, within 24 hours of notification.
    a. For a Major or Serious emergency:
        i. Initiate shutdown plan

ii. If contamination is detected, identify and implement appropriate remedial actions (in consultation with the UIC Program Director).

b. For a Minor emergency, except the below (c)
   i. Conduct assessment to determine whether there has been a loss of mechanical integrity.
   ii. If there has been a loss of mechanical integrity, inititate shutdown plan.

c. For Elevated concentrations of indicator parameter(s) in groundwater sample(s) or other evidence of fluid (brine) or CO2 leakage into a USDW.
   i. Initiate shutdown plan.
   ii. Insert appropriate additional steps.
   iii. If the presence of indicator parameters are confirmed, develop (in consultation with the UIC Program Director) a case-specific work plan to:
   iv. Install additional groundwater monitoring points near the affected groundwater well(s) to delineate the extent of impact; and
   v. Remediate unacceptable impacts to the affected USDW.
   vi. Arrange for an alternate potable water supply, if the USDW was being utilized and has been caused to exceed drinking water standards.
   vii. Proceed with efforts to remediate USDW to mitigate any unsafe conditions (e.g., install system to intercept/extract brine or CO2or "pump and treat" to aerate CO2-laden water).
   viii. Continue groundwater remediation and monitoring on a frequent basis (frequency to be determined by INSERT PERMIT APPLICANT NAME and the UIC Program Director) until unacceptable adverse USDW impact has been fully addressed.

Project Plan Submissions

Testing and Monitoring Plan (Template/Narrative)

Table [SEQ Table * ARABIC]: Facility Information

Information	**CFR and Guidance**	**Location & File: GSDT or CBI?**
Facility Information	40 CFR 146.82(a)(15); Plan: 40 CFR 146.90; LAC §3607.C.2.n §3625.A Guidance:	
1. Facility name		
2. Facility contact		
3. Well location: city, co. state; lat/long		

Table [SEQ Table * ARABIC]:Overall Strategy and Approach for Testing and Monitoring

Information	CFR and Guidance	Location & File: GSDT or CBI?
Overall Strategy and Approach for Testing and Monitoring	40 CFR 146.90(k); LAC §3625.A.11 40 CFR 146.91; LAC §3629.A	
1. Narrative: the proposed testing and monitoring activities support USDW non-endangerment, and collect sufficient data on site-specific system behavior		
a. spatial distribution (depth and areal extent) of the proposed monitoring network		
b. data collection schedule		
c. collection locations & frequency		
d. Fit to regional/site & risk profile; inc. seismicity		
e. How are areas of concern it site char/AoR modeling addressed.		
f. how will collected data be compared to baseline data, etc.		
2. Quality assurance procedures		
3. Reporting procedures		

Table [SEQ Table * ARABIC]: Carbon Dioxide Stream Analysis

Information	CFR and Guidance	
Carbon Dioxide Stream Analysis	40 CFR 146.90(a); LAC §3625.A.1	
1. Sampling location and frequency		
a. specific schedule for CO2 stream sampling		
b. How was this "sufficient frequency"		
2. Baseline deviation: predicted, or average values		
3. Changes in sampling based on results/deviations		
a. shut-in for X time, the CO2 stream analyzed X (days, weeks) after ops resume.		
b. Define alternative CO2 stream sampling schedule based on injected amount,		

not time, triggered if permit modified or if injection activities deviate significantly (define) from expected rates (e.g., if injection volume is less than X over X period).		
c. A significant (define) change in chemical or physical characteristics of the CO2 stream will trigger additional sampling at a frequency of X to collect sufficient data to characterize the CO2 stream		
4. Details of any tracer plan		
5. Analytical parameters: table with method		
6. Sampling methods		
a. Where collected		
b. What materials/equipment used?		
c. What sample collection procedures for representative sample? (Refer to the QASP as appropriate.)		
7. Laboratory to be used/chain of custody and analysis procedures		
a. Where analyzed		
b. What chain of custody procedures (Refer to QASP)		
c. What detection limits for analytical methods (Refer to QASP)		

Table [SEQ Table * ARABIC]: Continuous Recording of Operational Parameters

Information	CFR and Guidance	Location & File: GSDT or CBI?
Continuous Recording of Operational Parameters	40 CFR 146.88(e)(1), 146.89(b) and 146.90(b); LAC §§3621.A.6.a, 3627.A.2, and 3625.A.2	

1. Monitoring location and frequency (table): parameter, device, location, min sampling & recording frequencies		
2. Monitoring details: for each parameter, refer to table		
a. Specific location		
b. equipment/instrumentation		
c. how often sampled/recorded		
d. formulas or conversion factors (citations)		
e. deviation from baseline, predicted, or average values		
f. support internal mechanical integrity		
g. changes in injection rate or annular pressure trigger additional sample collection or change the sampling schedule		

Table [SEQ Table * ARABIC]: Corrosion Monitoring

Information	**CFR and Guidance**	**Location & File: GSDT or CBI?**
Corrosion Monitoring	40 CFR 146.90(c); LAC §3625.A.3	
1. Monitoring location and frequency		
a. Specific schedule		
b. Additional monitoring if deviation		
2. Sample description: (table: component & construction material):		
a. Which materials monitored		
b. Baseline assessment		
3. Monitoring details		
c. Design for representative conditions		
d. Techniques to assess & quantify (citations)		

Information	CFR and Guidance	Location & File: GSDT or CBI?
e. deviation from baseline, predicted, or average values		
f. supplemental tests or logging		

Table [SEQ Table * ARABIC]: Above Confining Zone Monitoring

Information	CFR and Guidance	Location & File: GSDT or CBI?
Above Confining Zone Monitoring	CFR 146.90(d); 40 CFR 146.95(f)(3)(i) LAC §3625.A.4; Formation depth waivers per 40 CFR 146.95(f)(3)(i) will not be permitted.	
1. Monitoring location and frequency: table (Formation, activity, location, spatial coverage, frequency)		
a. Specific sampling schedule		
b. Depth/elevaton of each interval		
c. deviation from baseline, predicted, or average values		
d. sufficiency of monitoring wells for site		
e. triggers by geochemical changes		
f. sufficiently identify leaks/characterize ground water quality above the confining zone		
g. accompanying indirect monitoring for comprehensive leak detection/ground water monitoring strategy		
h. phased monitoring planned based on predicted plume migration		

Information	CFR and Guidance	Location & File: GSDT or CBI?
2. Analytical parameters: table (Each Formation: parameter & analytical method)		
a. Why site-specific set of parameters		
b. Trigger criteria for tracer detection		
3. Sampling methods: material used, collection procedures (QASP)		
4. Laboratory to be used/chain of custody procedures: detection limits (QASP)		

Table [SEQ Table * ARABIC]: External Mechanical Integrity Testing

Information	CFR and Guidance	Location & File: GSDT or CBI?
External Mechanical Integrity Testing	40 CFR 146.89(c) and 146.90; LAC §3627.A.3 and §3625.A	
1. Testing location and frequency:		
a. Specific timing of MITs (table: test & location)		
2. Testing details (each test)		
a. specific procedures		
b. gauges or equipment; range, precision, etc.		
c. define pass or fail		
d. additional data for 'no significant leak'		
e. MITs in monitoring wells (include in table)		

Table [SEQ Table * ARABIC]: Pressure Fall-Off Testing

Information	CFR and Guidance	Location & File: GSDT or CBI?
Pressure Fall-Off Testing	40 CFR 146.90(f); LAC §3625.A.6	
1. Testing location and frequency: inc. timing		
2. Testing details:		
a. Specific procedures		
b. Gauges or other equipment (range, precision…)		

Table [SEQ Table * ARABIC]: Carbon Dioxide Plume and Pressure Front Tracking

Information	CFR and Guidance	Location & File: GSDT or CBI?
Carbon Dioxide Plume and Pressure Front Tracking	40 CFR 146.90(g); LAC §3625.A.7	
1. QASP		
2. Plume monitoring location and frequency: (Table: Direct & Indirect: Fm; activity; location; special coverage; freq)		
3. Specific schedule		
4. Continuous monitoring: how sampled & recorded		
5. Mixed location/frequency or adaptive:		
6. Triggers & timeframes		
7. Maps for locations		
8. Depth/elevation of each interval		
9. Plume monitoring details (each method): Table (by Fm: parameter, analytical method)		
a. Output data		
b. Gauges or other eq. (range, precision, …)		
c. QASP: fluid sample collection: materials used, procedures, analysis, COC, detection limits		
d. Processing methods for geophysical methods		
e. Deviation form baseline		

Information	CFR and Guidance	Location & File: GSDT or CBI?
f. proposed combination of direct and indirect monitoring		
2. Pressure-front monitoring location and frequency: (Table: Direct & Indirect: Fm; activity; location; special coverage; freq)		
a. QASP		
b. Specific schedule		
c. Continuous monitoring: sampling & recording		
d. Fixed or adaptive locations		
e. Depth/elevation of interval		
f. Output data		
g. Gauges or other eq. (range, precision, …)		
h. QASP: fluid sample collection: materials used, procedures, analysis, COC, detection limits		
i. Combination direct & indirect		
2. Pressure-front monitoring details		

Table [SEQ Table * ARABIC]:Surface Monitoring: Air or Soil Gas

Information	CFR and Guidance	Location & File: GSDT or CBI?
Surface Monitoring: Air or Soil Gas	40 CFR 146.90(h)	
1. Design based on risk		
2. Freq, spatial distr, etc, per 144.12		
3. Qualifications under Clean Air Act (cited) and 146.91(c)(5)	40 CFR 98.440-.449; a42 CFR USC 7401	
a. Additional modeling		
Additional modeling	40 CFR 146.90(i); 40 CFR 146.84(c) & 144.12	
1. To improve review evaluation		

Table [SEQ Table * ARABIC]: Periodic Review of Plan

Information	CFR and Guidance	Location & File: GSDT or CBI?
Periodic Review of Plan	40 CFR 146.90(j); 40 CFR 146.88 40 CFR 144.39 & .41	
1. Min every 5 years; with AoR review		
2. Amend or demonstrate none needed		
a. within 1 yr of AoR review		
b. after significant changes (+monitor or inj well)		
c. When required by Director		
Quality Assurance and Surveillance Plan		40 CFR 146.90(k);
1. Appendix		

Injection Well Plugging Plan (Template/Narrative)

Table [SEQ Table * ARABIC]: Facility Information

Information	CFR and Guidance	Location & File: GSDT or CBI?
Facility Information	40 CFR 146.82(a)(16); 40 CFR 146.92(b) & (c); 40 CFR 146.93(a)	
1. Facility name		
2. Well Number		
3. Facility contact & details		
4. Facility address		
5. Well location: city, co. state; lat/long		
Bottom-Hole Reservoir Pressure (BHP)	40 CFR 146.92(b)(1)	
1. Detailed steps or methods to determine BHP		

Table [SEQ Table * ARABIC]: External Mechanical Integrity Test(s)

Information	CFR and Guidance	Location & File: GSDT or CBI?
External Mechanical Integrity Test(s)	40 CFR 146.92(b)(2); Draft UIC Program Class VI Well Testing and Monitoring Guidance	
1. specific procedures for each type of test? (Provide a list of steps or similar description.)		
2. gauges or other equipment: range, precision, etc.		
3. What will constitute a "pass" or "fail" for each test?		
4. Table: planned tests: description; location		

Table [SEQ Table * ARABIC]: Information on Plugs

Information	CFR and Guidance	Location & File: GSDT or CBI?
Information on Plugs	40 CFR 146.92(b)(3) - (6);	
1. Table: materials & methods; all parameters (see template)		
2. Method for cement volume calculations		
3. Discussion of materials and potential interactions		

Table [SEQ Table * ARABIC]: Narrative Description of Plugging Procedures

Information	CFR and Guidance	Location & File: GSDT or CBI?
Narrative Description of Plugging Procedures	40 CFR 146.92(c); LAC §3631.A.4	
1. Notifications, Permits, and Inspections		
a. Agencies to be notified or involved with		
i. Additional permits		
ii. Inspections		
2. Plugging Procedures		
a. Specific procedures (detailed list)		
b. Contingency plans		

Table [SEQ Table * ARABIC]: Facility Information

Information	CFR and Guidance	Location & File: GSDT or CBI?
Facility Information	40 CFR 146.93; Draft UIC Program Class VI Well Plugging, PISC, and Site Closure Guidance	
1. Facility name		
2. Well Number		
3. Facility contact & details		
4. Well location: city, co. state; lat/long		

Table [SEQ Table * ARABIC]: Pre- and Post-Injection Pressure Differential

Information	CFR and Guidance	Location & File: GSDT or CBI?
Pre- and Post-Injection Pressure Differential	40 CFR 146.82(a)(17); 40 CFR 146.84(b); 40 CFR 146.93(a)(2)(i); LAC §3633.A.1.b.i	
1. Modeled time after closure to reach baseline pressure at the injection site.		
2. Expected decline rate: at well and monitor wells		
3. Largest differential in pressure over life of project; when		

Table [SEQ Table * ARABIC]: Predicted Position of the CO2 Plume and Associated Pressure Front at Site Closure

Information	CFR and Guidance	Location & File: GSDT or CBI?
Predicted Position of the CO2 Plume and Associated Pressure Front at Site Closure	40 CFR 146.93(a)(2)(ii); LAC §3633.A.1.b.ii 40 CFR 146.84; LAC §3615.B	
1. Figure: maximum extent of the plume and pressure front at end of timeframe above (per final model results)		

Table [SEQ Table * ARABIC]: Post-Injection Monitoring Plan

Information	CFR and Guidance	Location & File: GSDT or CBI?
Post-Injection Monitoring Plan		
1. Planned monitoring methods (details below)	40 CFR 146.93(a)(2)(iii); §3633.A.2.a	
a. Types by wells or sites; location; subsurface zone		
b. Access to monitoring wells	40 CFR 146.93(c)(2)(vii)	
c. QASP		
2. Monitoring Above the Confining Zone (by formation)	40 CFR 146.93(b)	
a. Monitoring Table: Ground water quality & geochemical changes		
b. Parameters & analytical methods Table		
2. Carbon Dioxide Plume and Pressure Front Tracking	40 CFR 146.93(a)(2)(iii); LAC §3633.A.1.b.iii	
a. Post-Inj Plume Monitoring: by Direct & Indirect methods Table		
b. Summary of Sampling & Analytics Table		
c. Pressure Front Monitoring Table: by direct & indirect, then formation		
d. QASP for Fluid Sampling		
e. Details for all sampling and monitoring		
2. Schedule for Submitting Post-Injection Monitoring Results	40 CFR 146.93(a)(2)(iv); LAC §3633.A.1.b.iv	
a. When		
b. Frequency		

Table [SEQ Table * ARABIC]: Alternative Post-Injection Site Care Timeframe

Information	CFR and Guidance	Location & File: GSDT or CBI?
Alternative Post-Injection Site Care Timeframe	40 CFR 146.93(c); §3633.A.3	
1. Summary of how each supports plan (data & calculations)		
a. Modeled time after closure to reach baseline pressure at the injection site.		
2. Computational Modeling Results (with figures: extents through time; cross-section; sensitivity runs)	40 CFR 146.93(c)(1)(i); LAC §3633.A.3.a.i	
a. Evolution of plume and pressure front with time		
b. Sensitivity analysis from AoR model; uncertain parameters; extent addressed in Testing & Monitoring		
c. How proposed operation conditions support this timeframe.		
3. Predicted Timeframe for Pressure Decline	40 CFR 146.93(a)(2)(i); 40 CFR 146.93(c)(1)(ii); LAC §3633.A.3.a.ii	
a. Same questions as next so could be combined so long as both pressure and plume are covered.		
b. decline: hetero or homogenous		
4. Predicted Rate of Plume Migration	40 CFR 146.93(a)(2)(ii); 40 CFR 146.93(c)(1)(iii); LAC §3633.A.3.a.iii	
a. Predicted/Actual rate or spread during and after injection		
b. Discuss decline/rate and effective end of motion or return to background pressure at well		
c. available monitoring data		

Information	CFR and Guidance	Location & File: GSDT or CBI?
d. Sensitivity analysis (here or below)		
e. Supporting documentation		
5. Site-Specific Trapping Processes	40 CFR 146.93(c)(1)(iv)-(vi); LAC §3633.A.3.a.iv through 3633.A.3.a.vi	
a. match methods used in AoR delineation		
b. Discuss physical and chemical trapping processes		
c. Trapping rates:		
i. Formulas (source)		
ii. Estimates		
iii. Parameters		
iv. Results changing over time		
d. Mineralization potential of CO_2		
2. Confining Zone Characterization	40 CFR 146.93(c)(1)(vii); LAC §3633.A.3.a.vii	
a. Site specific support for alternative PISC		
b. Discuss modeling of this zone for trapping		
c. Amendments needed for changes in different reporting modules.		
3. Assessment of Fluid Movement Potential	40 CFR 146.93(c)(1)(viii)-(ix); LAC §3633.A.3.a.viii through 3633.A.3.a.ix	
a. Aps as potential conduits; corrective action plan and modeled arrival		
b. USDW protection after cessation		
4. Location of USDWs	40 CFR 146.93(c)(1)(x); §3633.A.3.a.x	

Information	CFR and Guidance	Location & File: GSDT or CBI?
5. Compare the USDW (vertical and lateral) injection zone to		
i. Closest point		
ii. maximum plume extent		
c. summary of how USDW determined		
d. Other factors in analysis		
e. Discuss relative to PISC timeframe		

Table [SEQ Table * ARABIC]: Non-Endangerment Demonstration Criteria

Information	CFR and Guidance	Location & File: GSDT or CBI?
Non-Endangerment Demonstration Criteria	40 CFR 146.93(b)(2) and (3); 40 CFR 146.93(e); LAC §3633.A.2.b	
1. Introduction and Overview		
a. Summarize operational history, date of demonstration relative to post-injection PISC and Site Closure Plan.		
b. Overview of monitoring and modeling as support		
2. Summary of Existing Monitoring Data	40 CFR 146.91(e) 40 CFR 146.82(a)(6) and 146.87(d)(3); LAC §3629.A.5 §3607.C.2.e and 3617.B.4.c	
a. All previous data		
b. Compared to baseline		
3. Summary of Computational Modeling History		
c. Results for this aspect		
d. Compare model and monitoring; how compared		
e. Any disagreements in results		
4. Evaluation of Reservoir Pressure		
a. Types of data used		

Information	CFR and Guidance	Location & File: GSDT or CBI?
b. Compare to model predictions		
5. Evaluation of Carbon Dioxide Plume		
c. Types of data used		
d. Compare to model predictions		
6. Evaluation of Emergencies or Other Events		
a. Method to determine whether mobilized formation fluids are dangerous		
b. Compare to model		
c. Nearest AP or other potential conduit		
d. Relate to plume extent and pressure front		
e. Quality of AP construction and plugging		

Table [SEQ Table * ARABIC]: Site Closure Plan

Information	CFR and Guidance	Location & File: GSDT or CBI?
Site Closure Plan	40 CFR 146.93(a); 40 CFR 146.93(e); 40 CFR 146.93(f)(1)	
1. Plugging Monitoring Wells		
a. Same criteria as plugging plan.		
b. Well tests pre-plugging		
2. Other infrastructure removal		
3. Site restoration (state & local regulations)		
4. Site Closure Report	40 CFR 146.93(f)(2)	
a. Plugging any and all wells		
b. Plat survey of sealed injection well (submitted to which authority)		
c. Records: CO2 volume, composition, nature (?); post-monitoring	40 CFR 146.93(f)(3)	

d. Notation on property deed: sequestration site, plat (per above); volume fluid injected; formation used; period of injection.	40 CFR 146.93(g)	
5. Record retention	40 CFR 146.93(h)	

Table [SEQ Table * ARABIC]: Quality Assurance and Surveillance Plan (QASP)

Information	**CFR and Guidance**	**Location & File: GSDT or CBI?**
Quality Assurance and Surveillance Plan (QASP)		
1. Appendix		

Emergency and Remedial Response Plan[1] (Template/Narrative)

Table [SEQ Table * ARABIC]: Facility Information

Information	CFR and Guidance	Location & File: GSDT or CBI?
Facility Information	40 CFR 146.94(a); LAC §3623.A.1;	
1. Facility name		
2. Well number		
3. Facility contact & details		
4. Well location: city, co. state; lat/long		

Table [SEQ Table * ARABIC]: Local Resources and Infrastructure

Information	CFR and Guidance	Location & File: GSDT or CBI?
Local Resources and Infrastructure		
1. List resources (ex. USDW)		
2. List infrastructures (ex. treatment plants)		
3. Figure		

Table [SEQ Table * ARABIC]: Potential Risk Scenarios

Information	CFR and Guidance	Location & File: GSDT or CBI?
Potential Risk Scenarios	40 CFR 146.94	
1. Well Integrity Failure		
2. Injection Well Monitoring Equipment Failure		
3. Potential Brine or CO2 Leakage to USDW		
4. Natural Disaster		
5. Induced Seismic Event		
6. Table: Defining level, i.e. Major, Serious, Minor		

[1] A more detailed example would be under 40 CFR 267 Subparts C: Preparedness and Prevention & D: Contingency Plan and Emergency Procedures

Table [SEQ Table * ARABIC]: Emergency Identification and Response Actions

Information	CFR and Guidance	Location & File: GSDT or CBI?
Emergency Identification and Response Actions	40 CFR 146.91(c); 40 CFR 146.94; LAC §3629.A.3	
1. Steps to take to identify & characterize the severity (for each of the above)		
a. See template		
2. RESPONSE ACTIONS		
3. Notify UIC Director within 24 hours of event		
4. Other actions based on severity (for each of the above); see generic response		

Table [SEQ Table * ARABIC]: Response Personnel and Equipment

Information	CFR and Guidance	Location & File: GSDT or CBI?
Response Personnel and Equipment		
1. List all site personnel to be notified: maintain site specific emergency contact list for life of project		
2. Table of key contacts & phone numbers (local, state, tribal, national)		
3. Identify additional equipment that may be needed and who is responsible for obtaining it.		

Table [SEQ Table * ARABIC]: Emergency Communications Plan

Information	CFR and Guidance	Location & File: GSDT or CBI?
Emergency Communications Plan		
1. Cover all aspects of communication to the public		
a. What happened & when		
b. Investigation & responses: immediate, ongoing, long term		
c. Actual or potential impacts		
2. Communications with		
a. Local water systems		

b. CO_2 source		
c. Pipeline operators		
d. Land owners		
e. Regional Response Teams		
f. Other agencies		

Table [SEQ Table * ARABIC]: Plan Review

Information	**CFR and Guidance**	**Location & File: GSDT or CBI?**
Plan Review	40 CFR 146.94(d)	
1. Frequency of review (see template)		
2. Update permitting authority with results: changes or reason for no amendment necessary		

Table [SEQ Table * ARABIC]: Staff Training and Exercise Procedures

Information	**CFR and Guidance**	**Location & File: GSDT or CBI?**
Staff Training and Exercise Procedures		
1. Describe required training and drill procedures		
2. Target attendees		
3. Frequency		

Table [SEQ Table * ARABIC]: Complete Submission

Information	**CFR and Guidance**	**Location & File: GSDT or CBI?**
Validate Required Fields		
1. Required check for blank fields		
Authorized submission		
1. Must have completed an EPA Electronic Signature Agreement		
2. Submit means you agree to the certification.		